

CMD 4 1986



Corporate Resources



THE CITY OF CALGARY

ANNOUNCEMENT

RE: CITY OF CALGARY POPULATION PROJECTIONS 1986 - 2045

THE ATTACHED REPORT CONTAINS SHORT AND LONG-TERM POPULATION PROJECTIONS FOR CALGARY.

IT WAS PREPARED ON THE BASIS OF INFORMATION AVAILABLE PRIOR TO THE CURRENT RAPID CHANGES IN INTERNATIONAL OIL MARKETS. THIS LATTER SITUATION IS BEING MONITORED BY CORPORATE RESOURCES.

PERSONS USING THIS REPORT SHOULD BE AWARE THAT THE POPULATION PROJECTIONS PROVIDED ARE SUBJECT TO REVISION PENDING CLARIFICATION OF THE IMPACT OF INTERNATIONAL OIL PRICES UPON THE ALBERTA AND CALGARY ECONOMIES. IN PARTICULAR, THE PRESENT INDETERMINATE SITUATION MAY HAVE IMPLICATIONS FOR THE SHORT-TERM FORECASTS COVERING THE PERIOD 1986 - 1990.

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for

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DIRECTOR
CORPORATE RESOURCES DEPARTMENT

CMD 4 1986



**CITY OF CALGARY
POPULATION
PROJECTIONS 1986-2045**

PROJECT NO. 6002

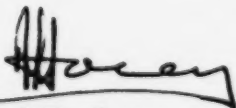
Prepared by: S. Math
Statistical Services Division
Corporate Resources Department
January, 1986

**Short-term Population Forecasts 1986 - 1990
and Long-term Projections to 2045 for Calgary**

The first part of this report contains revised short-term population forecasts to 1990, together with underlying economic/demographic assumptions and an analysis of emerging demographic trends. These short-term forecasts will be revised yearly if the City's annual civic census and/or changed economic circumstances warrant it.

The second part of the report contains long-term projections for the city to 2045. These are based on the long-term outlook for the province and an in-depth analysis of historical growth patterns of selected Canadian cities/Census Metropolitan Areas during 1901 - 1981. It is intended that the long-term projections will not be revised annually. Any major revisions will be undertaken only after careful tracking and analysis of the growth of the city's population and economy.

These projections supersede those in earlier publications released by Corporate Resources.



M.V. Facey

Director

CORPORATE RESOURCES

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HIGHLIGHTS

- o After population declines in 1983 and 1984 and an increase of about 5,000 persons mainly due to natural increase in 1985, the city's population is expected to grow by 10,000 to 15,000 persons annually over the short-term. This represents a growth rate of 1.9% to 2.5% compared to the 5% historical growth rate during 1946-1982.
- o The net migration level is expected to return to the pre-boom levels of about 10,000 per year after turning positive in 1986.
- o Significant shifts in the age structure of the city's population with major social/economic implications are expected to occur. That segment of the population 25 years of age and older is expected to maintain its growing share of the total population whereas younger age-groups are expected to decline as a proportion of the total population.
- o The median age of the city's population is expected to increase from 27 years in 1981 to about 33 years in 1995.
- o Like other Canadian cities, Calgary is expected to continue to grow over the long-term according to the medium outlook and reach the 1,000,000 mark by 2015. The population will become more stable and grow at slower rates.
- o All the scenarios of the city's population growth show increases over the long-term except for the most pessimistic one (namely, that based on the low total fertility rate and low net-migration assumptions). In the latter case, the city's population would begin to decline after 2025.

INTRODUCTION:

The population projections released in August 1984 were revised as a result of the April 1985 Civic Census count and an Information Bulletin reflecting the changes entitled "Short-Term Population Forecasts for the City of Calgary 1986 - 1991" was released by Corporate Resources in August 1985. On the basis of the most recent information available and a re-assessment of the provincial and local economies, these short-term forecasts have been revised upwards. Part I of this report contains the short-term population forecasts, the underlying demographic/economic assumptions and an analysis of emerging demographic trends.

The short-term population forecasts will be revised each year if the city's annual civic census and/or the potential economic developments affecting Calgary warrant it.

Part II of the report contains long-term population projections to year 2045 which have been prepared to meet user demands. It also contains an underlying demographic/economic outlook. It is intended that the long-term population projections will not be revised annually. This will avoid wide swings in the projections as a result of changes in the short-term assumptions.

These projections have been produced by the widely-used Cohort-Component method which requires assumptions with respect to each component of the following basic population growth identity:

$$\begin{aligned} \text{Population (Year } t + 1) &= \text{Population (Year } t) \\ &\quad + \text{Natural increase (Year } t) \\ &\quad + \text{Net migration (Year } t) \end{aligned}$$

$$\text{Natural Increase (Year } t) = \text{Births (Year } t) - \text{Deaths (Year } t)$$

$$\text{Net Migration (Year } t) = \text{Excess of those moving into the city over those moving out (Year } t)$$

This method of calculating future population is generally preferred as it can be used to project the population by single years of age or age-groups. This allows reasonably good estimates to be made of age-groups within the future population if the inputs are reliable and of good quality.

Further details of the population projection model can be found in earlier reports released by Corporate Resources, (e.g. "City of Calgary Population Projections 1985 - 2005", Corporate Resources Department, August 1984).

The underlying demographic/economic assumptions have been developed for the short-term 1 to 5 years, as it is difficult to determine plausible scenarios for the long-term. On the basis of an analysis of the city's own historical growth and those of other cities/Census Metropolitan Areas in Canada during 1901 - 1981; a qualitative valuation of the future economic outlook for Alberta and Calgary; and the trends in total national fertility rates; the short-term assumptions have been modified and extended into the future. These assumptions are discussed in Part II.

These projections do not take into consideration any devastating natural disasters, unforeseen domestic/international or socio-economic/ political developments that may suddenly impact the city's population growth. The basic input of the model (namely, the distribution of the city's population by single years of age) has been obtained from the June 1981 Federal Census. This input will be revised when new information from the June 1986 Federal Census becomes available.

These forecasts/projections supersede those released earlier by Corporate Resources.

These forecasts should not be viewed as a prediction of what Calgary's population will be at any given time but rather as a projection of what would happen if the conditions assumed actually prevailed.

For further information on the methodology or detailed age-sex distribution of the projected population, please contact:

Statistical Services Division
Corporate Resources Department
The City of Calgary
P.O. Box 2100
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Calgary, Alberta T2P 2M5

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Additional copies of the report can be purchased from:

Planning Information Centre
Planning & Building Department
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ACKNOWLEDGEMENTS

Information provided by Alberta Social Services and Community Health, Alberta Bureau of Statistics, Canada Employment and Immigration, Statistics Canada and the contribution of the Corporate Economics Division of Corporate Resources are gratefully acknowledged.

PART I:

SHORT TERM POPULATION FORECASTS 1986 - 1990

Demographic Assumptions

Mortality

An analysis of historical data on deaths (Calgary residents only) indicates that the mortality rate for Calgary is quite stable. This trend also emerges provincially and nationally. Calgary's crude death rate has been gradually declining over the years and seems to have stabilized presently at about 5 per 1000 (Figure 1, Page 7). Any further reductions in mortality rates are expected to be moderate. Therefore, unlike other components of population growth, a single assumption is made with respect to mortality. Age-sex specific survival rates based on June 1981 Federal Census data have been applied throughout the projection period.

Fertility

If there were no net migration, a region's population would still grow for some period of time due to natural increase but this growth could not be sustained unless the fertility rate increased to 2.1 or above. However, the fact should be noted that urban centres do attract migrants.

Figure 2, Page 8 shows that, in recent years, there has been a continuous declining trend in total fertility rates not only in North America but also in some of the other industrialized western countries.

This trend, a concern among these nations, can be attributed to several socio-economic factors such as "none is fun", greater participation of women in the labor force, postponement of marriages and births, increased numbers of divorces and non-family households, fewer children later in life at longer intervals, easy access to

FIGURE 1

- 7 -

CRUDE BIRTH AND DEATH RATES CITY OF CALGARY 1961-1984

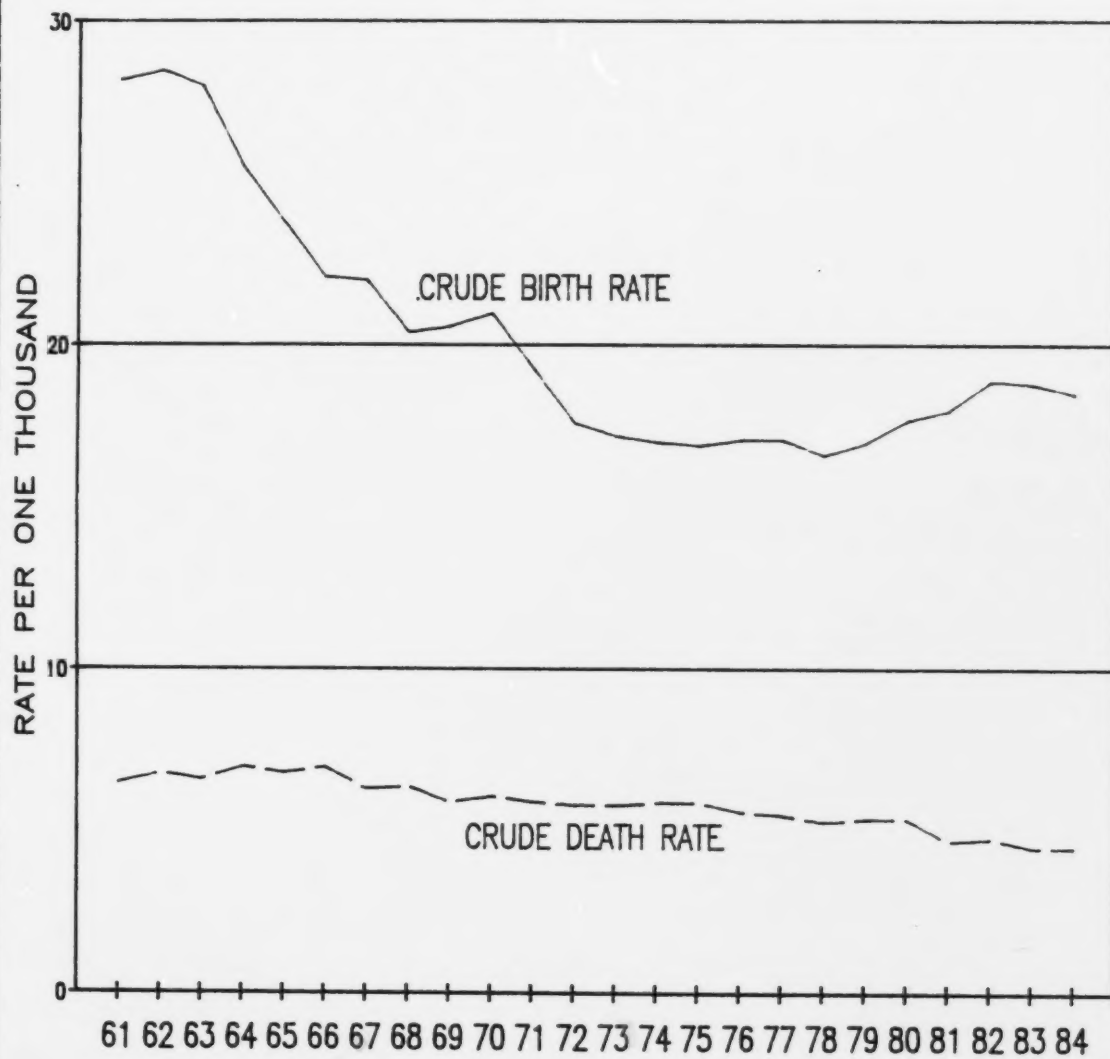
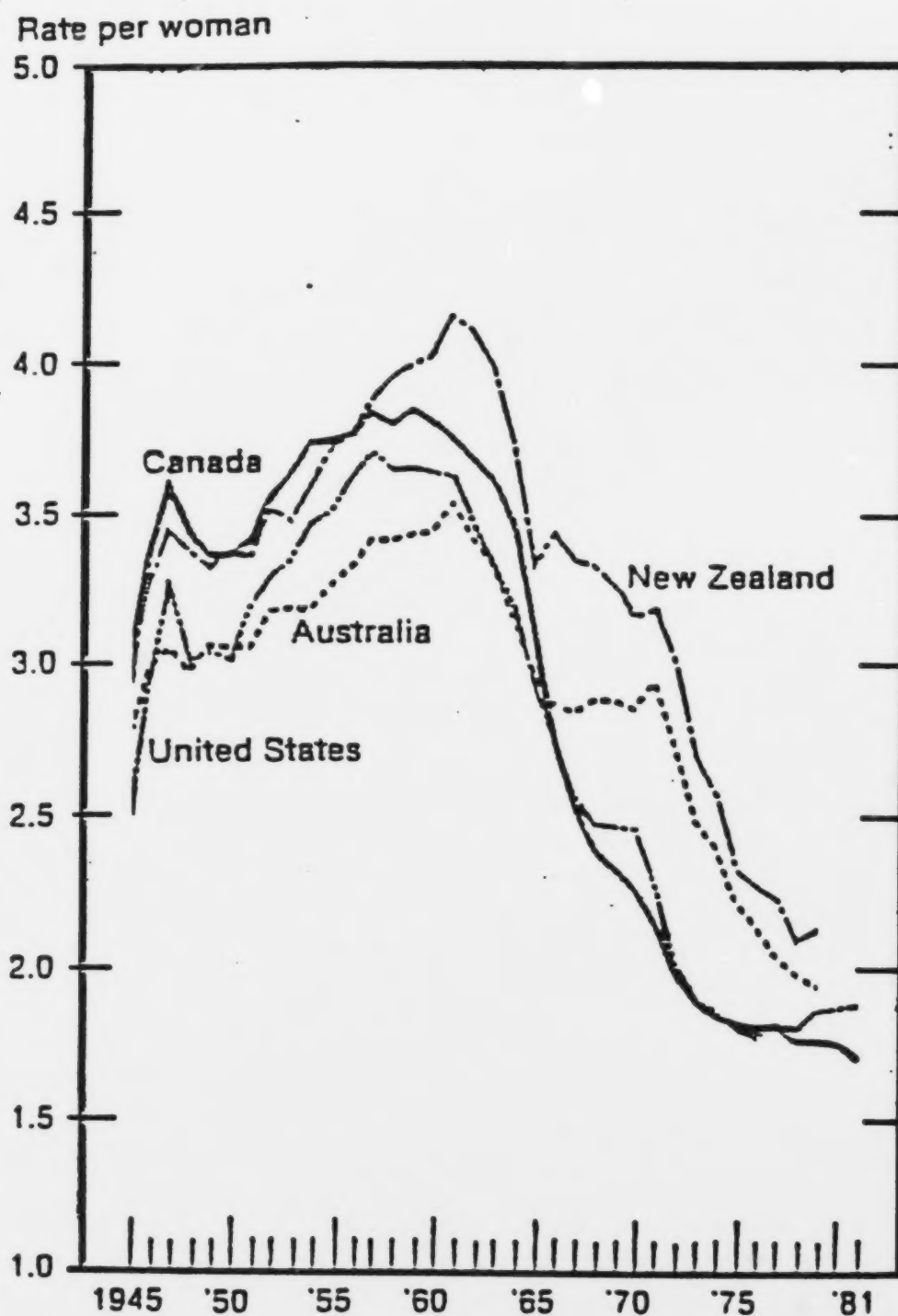


FIGURE 2

Total Fertility Rate, Selected Industrialized Countries, 1945-1981



SOURCE: Statistics Canada

abortion and contraceptives, etc. Table 1, Page 10 shows increases in the proportion of childless ever-married women aged 20 - 34 during 1961-1981. This trend is expected to continue.

West Germany has already fallen to a total fertility rate of 1.4. In Canada, Quebec's total fertility rate is estimated to be about 1.5, the lowest of any of the provinces.

Calgary's crude birth rate has been declining over the years notwithstanding slight increases in 1983 and 1984. Data available on total fertility rates for Calgary from the Federal Censuses of 1966 - 1981 also show a declining trend. These trends are in tune with the provincial and national trends, as Table 2, Page 11 shows.

All the recent demographic studies in the U.S. and Canada indicate a further decline in total fertility rates unless, in the coming decades, the Federal Government adopts pro-natalist policies and tries to reverse the trend.

For the short-term population forecasts, a single total fertility rate of 1.6 has been assumed. It represents an average rate over the forecast period.

TABLE 1

PROPORTION OF EVER-MARRIED CANADIAN WOMEN
WHO HAVE NOT YET HAD ANY CHILDREN BY AGE-GROUPS

Age	Proportion		
	1961	1971	1981
20-24	26%	42%	54%
25-29	14%	21%	30%
30-34	—	9%	14%

Source: Censuses of Canada 1961 - 1981

TABLE 2

TOTAL FERTILITY RATES
CITY OF CALGARY,
ALBERTA AND CANADA

1966 - 1981

Year	Calgary	Alberta	Canada
1966	2.8	3.1	2.8
1971	2.2	2.4	2.2
1976	1.7	2.0	1.8
1981	1.6	1.9	1.7

Source: Censuses of Canada 1966 - 1981

Net Migration Assumptions and Economic Outlook

Net Migration

This component of population growth, known for its irregularity, is the most sensitive to economic conditions (Table 3, Page 13). The net migration figures for the province used in this graph are on a June 1 to June 1 basis but, considered on a quarterly basis, the total net migration of -7,600 for the first three quarters of 1985 is quite encouraging compared to a quarterly average of about -9,000 for 1984 (Table 4, Page 14). This indicates that the provincial economy is on the mend.

Historically, from the mid-1960s through the mid-1970s, the net migration levels for Calgary were in the range of 5,000 to 10,000. During the boom years 1979 - 1982, this reached a level of about 22,000. Over the periods 1982 - 1983, 1983 - 1984 and 1984 - 1985, due to the recession, the city experienced net migration levels of -12,198, -10,613 and -3,000 respectively (Table 3, Page 13). The provincial experience (as Table 3, Page 13 and Table 4, Page 14 indicate) appears to be similar.

With the economic recovery underway, it would appear that the substantial outflow of people from the province and Calgary has subsided (Table 4, Page 14, and Figure 3, Page 15).

On the basis of an analysis of the economic outlook for Alberta and Calgary, pessimistic, optimistic and medium scenarios with respect to net migration in the future have been developed as outlined in Table 5, Page 21. According to the medium scenario, the city is expected to experience higher employment growth rates during 1986 - 1990. The population projections report released in August, 1984 did not expect net migration to turn positive until 1987/1988. According to the revised outlook, net migration is anticipated to turn positive during 1986 and attain a level somewhat similar to those of pre-boom years.

TABLE 3

UNEMPLOYMENT RATES AND NET MIGRATION
FOR CALGARY AND ALBERTA

1975 - 1985

Year	Unemployment Rate		Net Migration	
	<u>Calgary</u>	<u>Alberta</u>	<u>Calgary</u>	<u>Alberta</u>
1975	5.5	4.1	10,147	36,645
1976	4.7	4.0	9,793	38,951
1977	5.0	4.5	19,659	52,672
1978	5.4	4.7	9,401	47,330
1979	4.2	3.9	20,375	45,647
1980	3.7	3.7	23,889	62,012
1981	3.9	3.8	19,539	68,504
1982	8.2	7.8	14,117	50,275
1983	12.2	10.7	-12,198	17,987
1984	12.3	11.2	-10,613	-36,075
1985 *	10.62	10.23	-3,000	-24,520

* January - October, 1985 data.

Source: Corporate Resources, Alberta Bureau of Statistics,
Statistics Canada

Note: 1. Unemployment figures are on a calendar year basis.
2. Net migration refers to the 12 month period ending June 1 of the year indicated.

TABLE 4

NET MIGRATION
PROVINCE OF ALBERTA

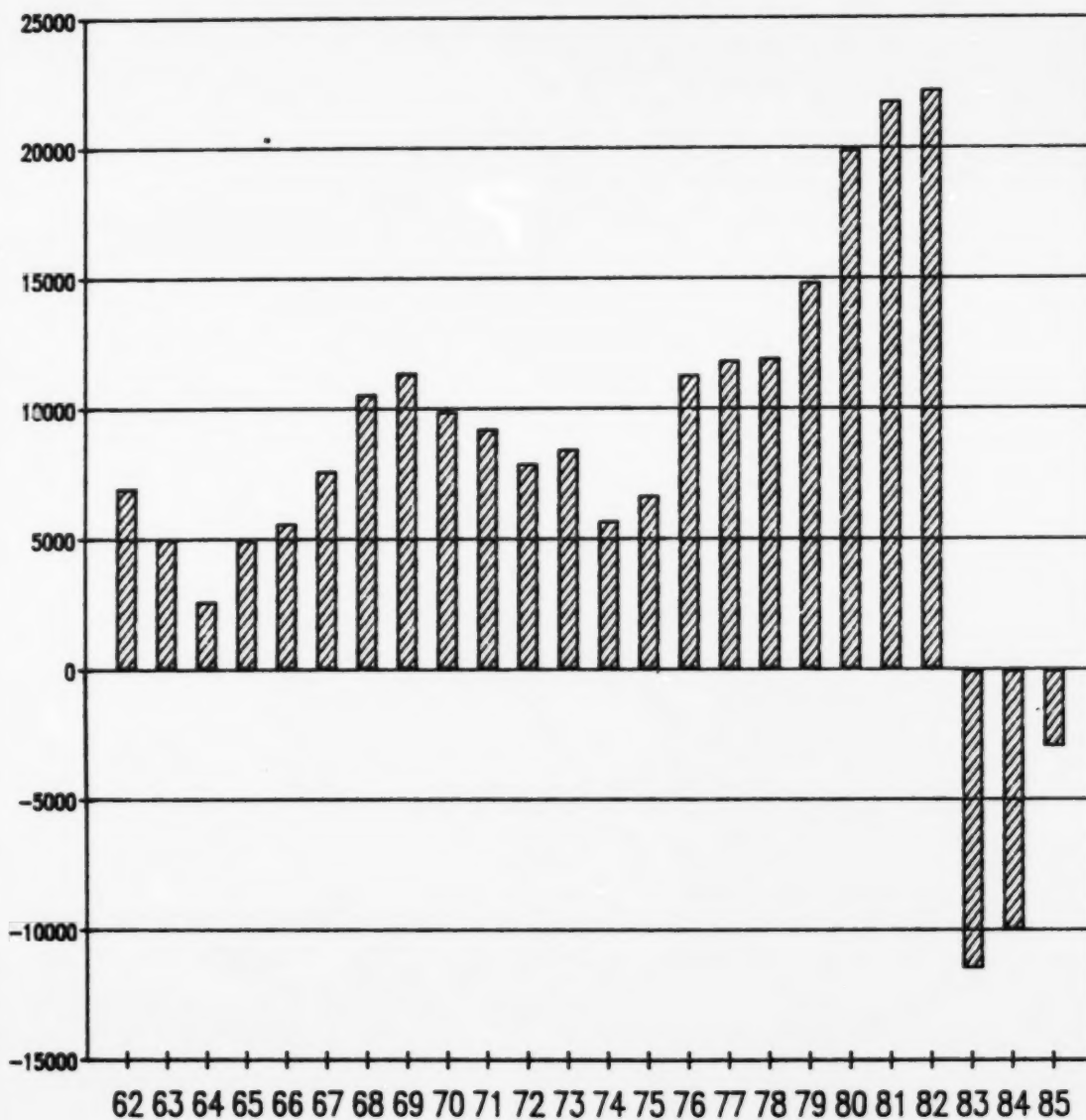
NET MIGRATION			
Year	Interprovincial	International	Total
1976	38,300	13,400	51,700
1977	37,700	11,200	48,900
1978	40,100	8,300	48,400
1979	45,900	11,200	57,100
1980	50,100	16,500	66,600
1981	41,700	14,400	56,100
1982	4,000	10,700	14,700
1983 Q1	-3,400	1,300	-2,100
Q2	-6,300	1,300	-5,000
Q3	-13,100	2,500	-10,600
Q4	-12,500	1,700	-10,800
TOTAL	-35,300	6,800	-28,500
1984 Q1	-9,300	1,200	-8,100
Q2	-10,100	1,900	-8,200
Q3	-14,400	2,000	-12,400
Q4	-7,500	600	-6,900
TOTAL	-41,300	5,700	-35,600
1985 Q1	-2,200	700	-1,500
Q2	-3,600	600	-3,000
Q3	-4,000	900	-3,100

Source: Alberta Bureau of Statistics

Note: Data on calendar year basis.

FIGURE 3

NET MIGRATION FOR THE CITY OF CALGARY (As of June 1)



CORPORATE RESOURCES DEPT. DSI 12/09/85

NOTE: Data refers to the period ending June 1 of the year indicated.

Over the short-term 1985 - 1990, according to the most likely scenario, the average level of net migration is expected to be about 8,500. The average net migration during 1961 - 1979 for the city has also been about 8,500.

The economic outlook, on the basis of which the net migration scenarios have been developed, is discussed briefly in the next section. For a detailed analysis of the economic outlook, reference should be made to the report "Economic Outlook 1986 to 1990", Corporate Economics Division, Corporate Resources, City of Calgary, November 1985.

Table 5, Page 21 contains the short-term population forecasts according to the three different net migration assumptions and a total fertility rate of 1.6. The age-sex distribution of the projected population can be found in Appendix B, Page 42.

Economic Outlook

The medium population forecast is predicated upon reasonably optimistic national, provincial and civic outlooks from 1986 on. Over the next five years, continued real economic growth and a significant reduction in national unemployment rates are anticipated as a consequence of lower interest rates, lower real oil prices, improvements in the U.S. economy, an expansion of Canadian business investments and increased consumer spending. The western energy accord is expected to add a substantial stimulus to both the Alberta and Calgary economies, offsetting the negative disposable income effects of the Federal Government's May 1985 budget.

A major recovery is foreseen for several sectors in Alberta. As increased energy activity stimulates the provincial economy, a strong economic recovery is foreseen for the manufacturing, construction, retail trades and service sectors. Annual real provincial economic growth is expected to average 5% over the period 1986 to 1990, approximately 3.5% between 1990 and 1995, and 2.5% to 3.0% between 1995 and 2000.

Calgary is expected to make a sharp recovery from the recent recessionary setbacks. Among the consequences of this recovery will be a dramatically reduced unemployment level and an inflation rate running above the national average over the next five years. The excessive number of foreclosed homes, unused supply capacity, and diminished demands in the market place have kept prices and wages low over the past few years. With renewed growth and demands within the province, these excess supply factors will diminish and consumer prices will tend to move slightly higher than national levels.

Emerging job opportunities have absorbed new entrants into the labour force and drawn down significantly on the city's unemployed labour force. Rising employment trends have been experienced by both salaried employees and hourly workers.

Over the next five-year period, economic growth in Calgary will be related to increased building activity in residential, apartment and office building construction, heightened consumer demands, increased tourist flows, and investor confidence.

In the medium population forecast, increased employment demands are expected to initially draw on locally unemployed resources as Calgary's economy begins to "snap back" quickly to a higher rate of growth. Given the large shocks felt throughout the city as a consequence of the recession, much of the momentum in the initial five years of the forecast is merely a return to 1981 levels - a "catching-up" in terms of economic growth.

Increasing employment requirements will begin to result in positive net migration beginning in 1986 and continuing through the five-year period. Local unemployment levels are expected to parallel those of the province and diminish to 5% by 1990. Calgary's annual net migration will increase to approximately 11,600 persons in the late 1980s and then decline moderately over the remainder of the forecast period as the rate of job creation declines in the 1990s.

On both sides of this medium scenario are negative and positive factors that could result in either lower or higher rates of economic growth for Alberta in general and Calgary in particular. The risk of these events occurring always exists, and upsides or downsides would result in differing net migration statistics and consequent population growth in the city.

On the downside, a decision by the O.P.E.C. members and non-O.P.E.C. producers to garner a larger share of international crude production and sales has resulted in a dramatic fall in world crude oil prices. If substantially lower oil prices were to prevail over the longer term, there may well be investment cutbacks or curtailments in larger energy projects. It is also possible that in spite of the risks to the economy, the U.S. Federal Reserve may elect to raise interest rates. Increased protectionism on the part of the United States would

also limit the growth of Canadian trade. It is shocks of this nature (but not all together) that result in the more pessimistic or low-growth scenario.

On the upside, tighter production controls on crude oil supplies may result in higher international prices. A rapid concurrence and agreement on a bi-lateral freer trade agreement with the United States, and additional growth stimulus in the U.S. economy would result in higher provincial and city growth than forecast in the medium scenario.

Short-Term Population Forecasts 1986 - 1990

After losing population in 1983 and 1984 due to the recession, Calgary experienced an increase of about 5,000 persons in 1985. During the boom years 1979 - 1982, the annual increases in the city's population were of the magnitude of 30,000 persons. Prior to that, the city grew in aggregate terms by about 10,000 to 15,000 persons annually.

According to the medium scenario, the city's population is expected to increase by 10,000 to 15,000 persons in aggregate terms - the pre-boom years' level of population growth. In percentage terms, the population growth rate is expected to be between 1.5% to 2.5% over the short-term compared to 5% growth rates of the pre-boom years. Table 5, Page 21 contains the projected population over the short-term, the net-migration assumptions, and the percentage growth rates.

The pessimistic outlook envisages a growth rate of 1% to 2% whereas the optimistic outlook anticipates a growth rate of 2% to 3% over the short-term.

Figure 4, Page 22 is a graph of the actual growth since 1972 and short-term population forecasts.

TABLE 5
SHORT-TERM POPULATION FORECASTS
CITY OF CALGARY
June 1, 1986 - 1990

1986 - 90	ASSUMED TOTAL FERTILITY RATE		
	1.6		
	ASSUMED NET MIGRATION		
	Low	Medium	High
1985 - 86	0	2,200	5,000
1986 - 87	1,500	8,400	9,200
1987 - 88	4,300	11,600	13,100
1988 - 89	4,500	10,500	13,600
1989 - 90	7,300	10,000	13,200

POPULATION IN THOUSANDS AND PERCENTAGE INCREASE					
	(%)		(%)		(%)
1985*	625.3	625.3	625.3		
	1.2		1.55		2.02
1986	632.8	635.0	637.9		
	1.36		2.47		2.59
1987	641.4	650.7	654.4		
	1.73		2.87		3.12
1988	652.5	669.4	674.8		
	1.67		2.61		3.08
1989	663.4	686.9	695.6		
	2.20		2.45		2.90
1990	676.8	703.7	715.8		

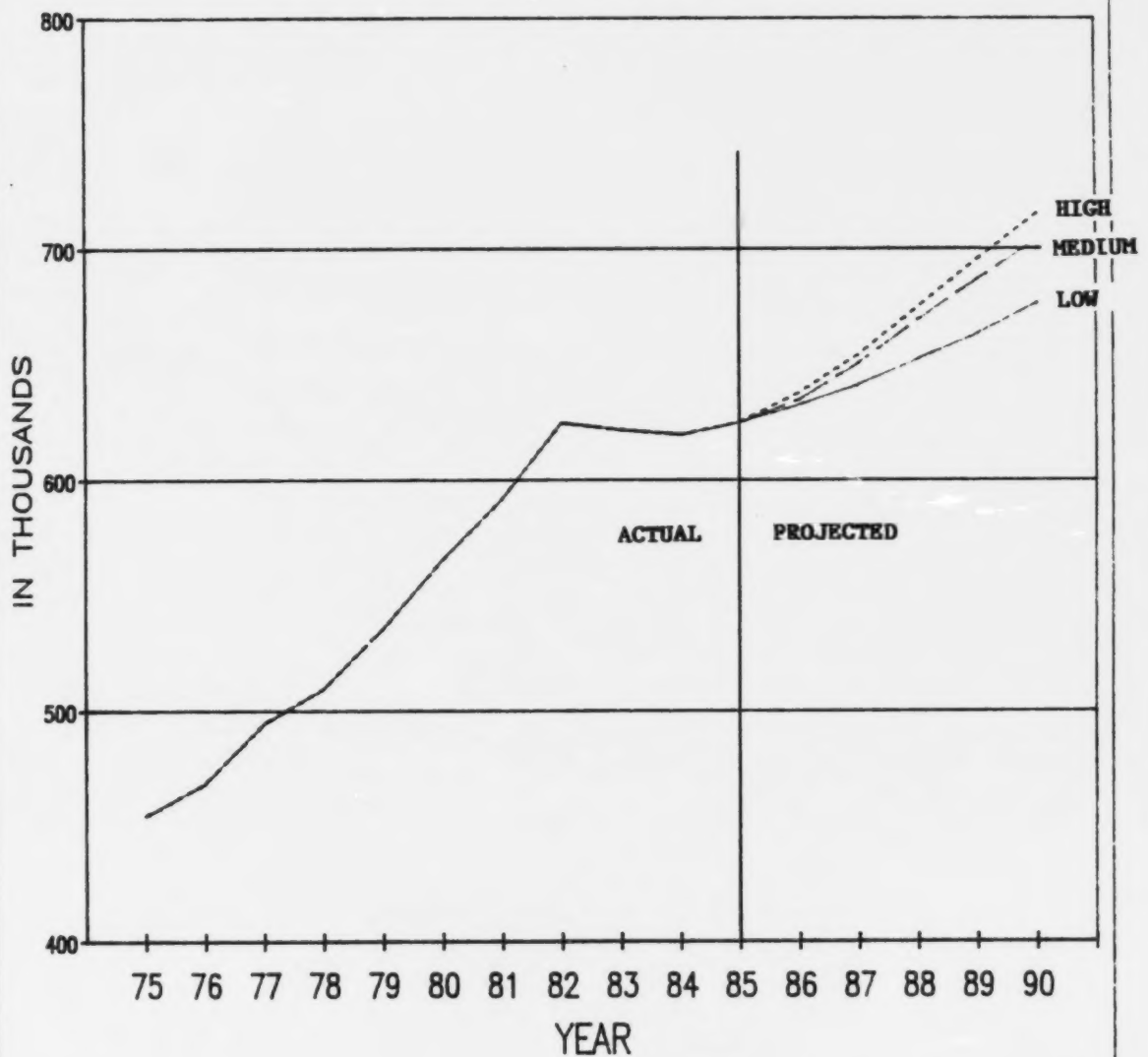
Note: 1. Outlined column represents the medium projection recommended by the Corporate Resources Department.

* Estimate as of June 1

Source: Corporate Resources

FIGURE 4

ACTUAL POPULATION AND SHORT-TERM FORECASTS 1975-1990 CITY OF CALGARY (As of June 1)



**Analysis of Historical and Emerging
Demographic Trends: Selected Age-Groups**

In this section, an analysis of historical and projected changes in the structure of selected age-groups of the city's population is presented. Large-scale shifts in the age-structure will have far-reaching economic and social implications.

0 - 17 Years

This age-group represents the pre-school and school-age population. Figure 5, Page 24 shows that the proportion of this segment of the population has declined from 38.42% in 1966 to 26.28% in 1981. According to the medium scenario of population growth, it is expected to further decline to about 24.94% by 1990.

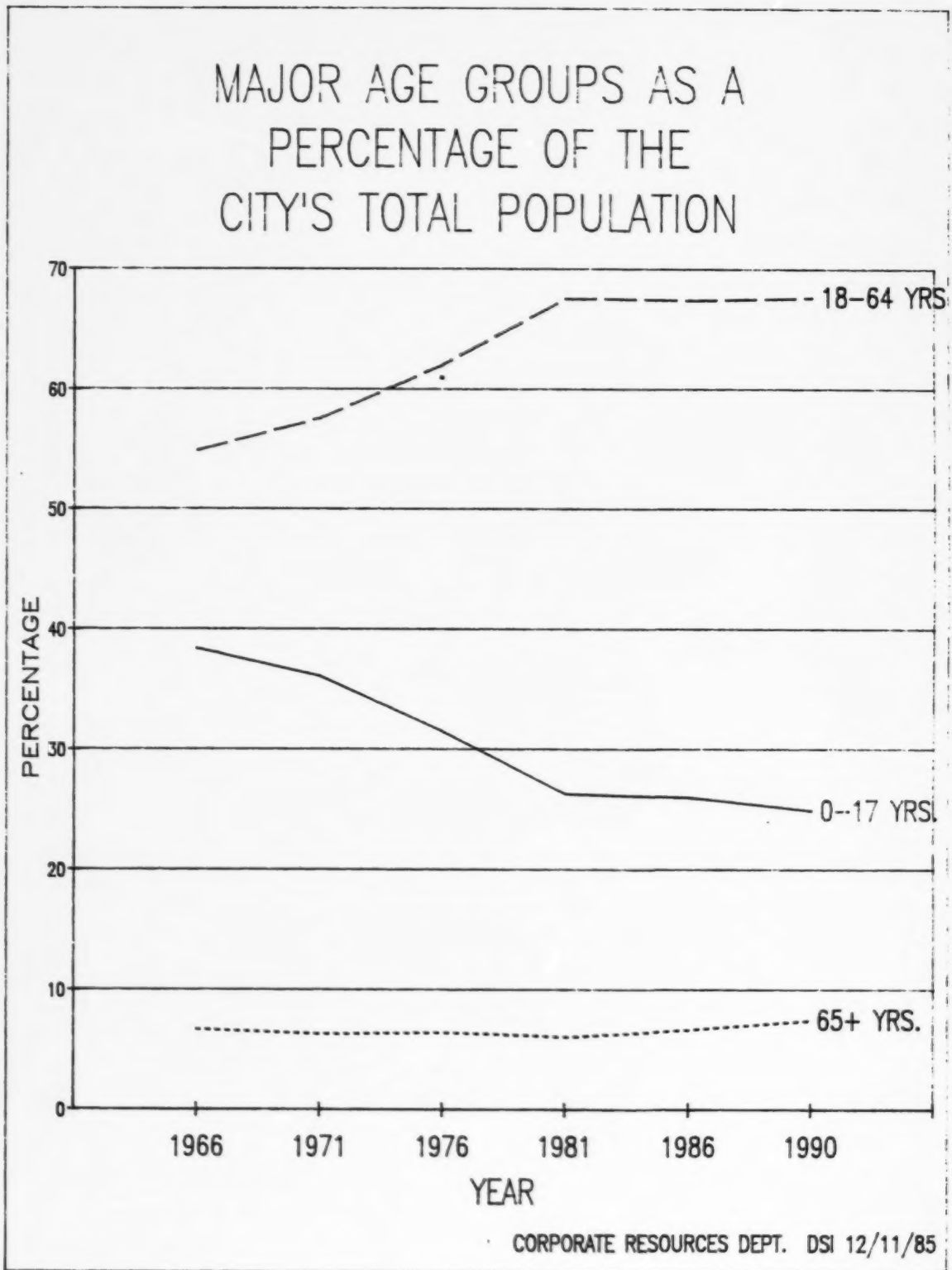
18 - 64

This segment represents the predominant labor force. As Figure 5, Page 24 shows, the population in this age-group increased from 54.93% in 1966 to 67.58% in 1981. This level is expected to be maintained through 1986 - 1990.

18 - 24

This represents the age-group in which many people attend post-secondary institutions, start families, join the work force, and are most likely to migrate in search of job opportunities. The proportion of people in this age-group grew from 10.95% in 1966 to 17.93% in 1981. During the boom years, the massive influx of people that occurred in Calgary was predominantly in this age-group. However, due to the recession and the out-migration that occurred during 1982 - 1985, the proportion of people in this age group is expected to continuously decline and reach a level of 10.53% by 1990 (Figure 6, Page 26). Data from the April 1983 and 1984 Civic Censuses also support this assumed trend.

FIGURE 5



25 - 44

This economically-active segment of the population has shown steady growth during 1966 - 1981. Figure 6, Page 26 shows the proportion of the population in this age-group increased from 28.41% in 1966 to 34.0% in 1981. According to the medium outlook of population growth, it is expected to stay at about 40% during 1985 - 1990. This trend is also evidenced by data from the April Civic Censuses of 1983 and 1984.

45 - 64

This age-group has fluctuated between 15% and 17% of the city's total population during 1966 - 1981. For 1983 and 1984, the figures are approximately 15% and 15.4% respectively as revealed by civic census data. This age-group is expected to remain at a level of about 16% of the total population during 1986 - 1990 (Figure 6, Page 26).

65+ Years

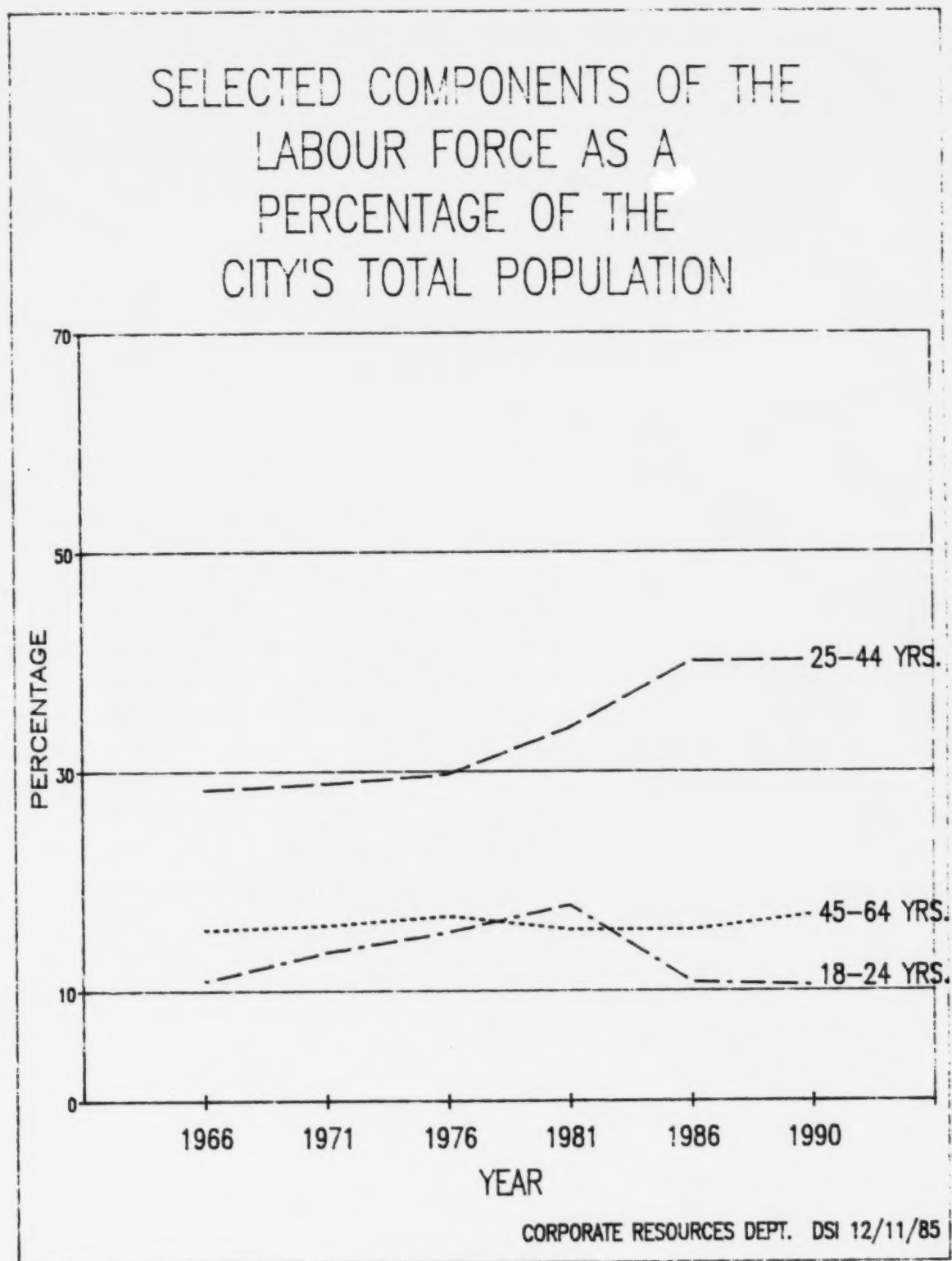
Senior citizens have comprised about 6% of the population during 1966 - 1984. According to the medium projection, seniors are expected to increase gradually to about 7% by 1990 (Figure 5, Page 24).

Most of the trends described above also emerge nationally.

Median Age

The city's population is aging. The median age rose from 25 years in 1966 to about 27 years in 1981. It is expected to be about 30 years in 1986 and rise to 33 years by 1995. Estimates from the April 1983 and 1984 Civic Census data are also supportive of this trend.

FIGURE 6



PART II:

LONG-TERM POPULATION PROJECTIONS TO YEAR 2045

Demographic Assumptions

In view of the stability of crude death rates, the age-sex specific survival rates applied to the short-term projections have been extended to 2045.

As outlined in Table 6, Page 29 three different assumptions with respect to total fertility rates have been made. The low-growth scenario assumes an average total fertility rate of 1.4 during 1985-2000 and an average of 1.6 beyond the year 2000. According to the medium assumption, the total fertility rate is expected to average about 1.6 during 1985-2000 and increase to 1.9 beyond 2000. The high-growth scenario assumes an average total fertility rate of 1.8 to year 2000 and 2.1, the population replacement level, beyond 2000.

Due to the continuing declining trends in national fertility rates and a concern about boosting population growth, it is assumed that towards the end of the century pro-natalist policies will be adopted, leading to higher total fertility rates as has happened in some of the other Western industrialized countries.

Net Migration and Long Term Economic Outlook

The short-term population forecasts are based on an assumption of higher employment growth rates for the province and, therefore, Calgary. Based on an assessment of the economic outlook for the province, this growth in employment is anticipated to slow down towards the end of the century. Sustained growth of the provincial and local economies beyond 2000 will depend on the future of the resource and agriculture sectors, the degree of diversification of the provincial economy, the impact of free trade, development of high tech, biotech, and other developments of national and international scope.

An assessment of the outlook for the provincial economy over the next 15 years and an in-depth analysis of the historical growth pattern of selected Canadian cities/Census Metropolitan Areas during 1901-1981 (to be discussed in the next section) led to three different scenarios with respect to net migration as outlined in Table 6, Page 29.

The medium scenario assumes an average net migration level of about 7,000 during 1990-1995 and an average of 6,500 over the remainder of the forecast horizon. As noted earlier, the city experienced an average level of net migration of 8,500 during 1961-79.

The pessimistic outlook assumes an average net migration level of 4,000 during 1990-1995 and an average of about 3000 during 1995-2045.

According to the optimistic scenario, the average net migration level of 9,600 during 1990-1995 is expected to gradually decline later and has been held constant at an average of 8,500 beyond 1995.

TABLE 6

**TOTAL FERTILITY RATES AND NET MIGRATION ASSUMPTIONS
USED IN POPULATION PROJECTIONS
FOR THE CITY OF CALGARY**

	TOTAL FERTILITY RATE		
	Low	Medium	High
1990 - 2000	1.4	1.6	1.8
2001 - 2045	1.6	1.9	2.1
	NET MIGRATION		
	Low	Medium	High
1990 - 91	6,000	8,500	11,500
1991 - 92	4,500	7,500	10,500
1992 - 93	3,500	7,000	9,000
1993 - 94	3,000	6,500	8,500
1994 - 95	3,000	6,500	8,500
1995 - 2045	3,000	6,500	8,500

**Historical Growth of Selected Cities/Census
Metropolitan Areas**

For the purposes of long-term population projections for Calgary, growth patterns of other Canadian cities/Census Metropolitan Areas during 1901-1981 have also been examined. City of Calgary is coterminous with Calgary Metropolitan Area (see Glossary of Terms).

Table 7, Page 31 shows the growth pattern of selected Canadian cities/Census Metropolitan Areas during 1961-1981. The growth rates for different cities have varied between 0.5% and 5% with Calgary consistently maintaining a high growth rate of 4% to 5%. Data on population growth during 1901-1981 would appear to indicate that the cities/Census Metropolitan Areas have grown at very high rates at different times but these growth rates have stabilized after a certain point as Table 7, Page 31 shows. The emerging growth patterns for the cities indicate that the urban centres, after reaching a stage of maturity, grow at a slow pace and still attract domestic or overseas migrants. During 1961-81, Calgary and Edmonton were the only two Census Metropolitan Areas which showed growth rates of 3% to 5% whereas most of the other Census Metropolitan Areas saw their growth rates of 2% to 5% taper off to 0.5% to 1.75%. It would appear that while Calgary has not yet reached maturity, growth rates significantly lower than the long-term historical average will be experienced.

TABLE 7

ANNUAL AVERAGE GROWTH RATE (%)
OF SELECTED CENSUS METROPOLITAN AREAS (CMAs)

CMA	61-66	66-71	71-76	76-81
CALGARY	3.69	4.40	3.30	5.23
EDMONTON	3.78	4.72	2.35	3.71
HAMILTON	2.73	2.40	1.04	0.48
MONTREAL	3.10	2.40	0.54	0.18
OTTAWA	3.02	5.07	2.37	0.71
QUEBEC	3.12	4.26	1.63	1.25
SASKATOON	4.26	1.82	1.15	3.06
REGINA	3.39	1.47	1.49	1.74
TORONTO	3.66	4.11	1.54	1.40
VANCOUVER	2.58	4.26	1.55	1.75
VICTORIA	2.50	2.58	2.29	1.40
WINNIPEG	0.51	1.61	1.03	0.23

Source: Censuses of Canada 1961-1981

Long-Term Population Projections to Year 2045

Table 8, Page 33 gives long-term population projections and the annual percentage growth rates using the medium total fertility rate and the three sets of net migration assumptions. The long-term population projections based on the low and high fertility rates and the three sets of net migration assumptions can be found in Appendices C and D, Pages 43 through 48. According to the medium total fertility rate and medium net migration assumptions, the city's population is expected to increase by 200,000 people to 825,000 by 2000 and reach a million by about 2015. This outlook envisages a growth rate of about 1.9% to 0.5% during 1991 - 2045, a growth rate much smaller than the 5% experienced during 1946 - 1982 (Table 9, Page 37). All three scenarios show a tapering-off of the growth rates of the city's future population.

According to the most pessimistic scenario (namely, the low fertility rate and low net migration assumptions) the city's population will grow at rates of 0.7% to 0.1% during 1991-2025 but, after 2025, will start to decline gradually and drop from 815,000 in 2025 to 777,000 by 2045. All the other projections envisage moderate to high growth rates to 2045.

Figure 7, Page 36 contains a graph of actual growth and projected population on a quinquennial basis to 2025.

TABLE 8
LONG-TERM POPULATION PROJECTIONS
CITY OF CALGARY
1991-2045

Assumptions Medium Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	% Change	Medium Net Migration	% Change	High Net Migration	% Change
1991	688.5		718.7		734.2	
		1.42		1.91		2.34
92	698.3	1.22	732.4	1.77	751.4	2.08
93	706.8	1.08	745.4	1.64	767.0	1.93
94	714.4	1.02	757.6	1.57	781.8	1.85
95	721.7	.96	769.5	1.51	796.3	1.81
1996	728.6	.92	781.1	1.46	810.7	1.74
97	735.3	.87	792.5	1.41	824.8	1.69
98	741.7	.82	803.7	1.36	838.7	1.62
99	747.8	.80	814.6	1.31	852.3	1.58
2000	753.8	.98	825.3	1.50	865.8	1.78
2001	761.2	.95	837.7	1.47	881.2	1.72
2	768.4	.94	850.0	1.44	896.4	1.68
3	775.6	.92	862.2	1.40	911.5	1.65
4	782.7	.91	874.3	1.38	926.5	1.61
5	789.8	.89	886.4	1.35	941.4	1.58
2006	796.8	.88	898.4	1.34	956.3	1.56
7	803.8	.86	910.4	1.31	971.2	1.52
8	810.7	.85	922.3	1.29	986.0	1.50
9	817.6	.82	934.2	1.26	1000.8	1.47
10	824.3	.81	946.0	1.24	1015.5	1.44

Table 8 continued

Assumptions Medium Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	% Change	Medium Net Migration	% Change	High Net Migration	% Change
2011	831.0		957.7		1030.1	
		.78		1.21		1.41
12	837.5		969.3		1044.6	
		.74		1.18		1.37
13	843.7		980.7		1058.9	
		.71		1.14		1.34
14	849.7		991.9		1073.1	
		.67		1.11		1.30
15	855.4		1002.9		1087.0	
		.62		1.07		1.27
2016	860.8		1013.6		1100.8	
		.58		1.03		1.23
17	865.7		1024.0		1114.3	
		.54		1.00		1.18
18	870.4		1034.2		1127.5	
		.49		.95		1.15
19	874.7		1044.0		1140.5	
		.45		.91		1.11
20	878.6		1053.6		1153.2	
		.41		.87		1.08
2021	882.2		1062.7		1165.6	
		.36		.85		1.05
22	885.4		1071.7		1177.8	
		.34		.81		1.02
23	888.4		1080.4		1189.8	
		.30		.79		.99
24	891.1		1088.9		1201.6	
		.28		.76		.97
25	893.6		1097.2		1213.2	
		.26		.73		.95
2026	895.9		1105.2		1224.2	
		.23		.72		.91
27	898.0		1113.2		1235.9	
		.22		.70		.91
28	900.0		1121.0		1247.1	
		.21		.68		.88
29	901.9		1128.6		1258.1	
		.19		.66		.86
30	903.6		1136.1		1268.9	
		.18		.65		.84

Table 8 continued

Assumptions Medium Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	Z Change	Medium Net Migration	Z Change	High Net Migration	Z Change
2031	905.2		1143.5		1279.6	
		.17		.63		.82
32	906.7		1150.7		1290.1	
		.15		.62		.81
33	908.1		1157.8		1300.5	
		.14		.60		.78
34	909.4		1164.7		1310.7	
		.14		.59		.76
35	910.1		1171.6		1320.7	
		.12		.57		.75
2036	911.8		1178.3		1330.6	
		.12		.56		.74
37	912.9		1184.9		1340.4	
		.10		.54		.72
38	913.8		1191.3		1350.0	
		.10		.54		.70
39	914.7		1197.7		1359.5	
		.09		.52		.68
40	915.5		1203.9		1368.8	
		.08		.51		.66
2041	916.2		1210.0		1377.9	
		.07		.49		.66
42	916.8		1215.9		1387.0	
		.05		.48		.63
43	917.3		1221.7		1395.8	
		.04		.47		.63
44	917.7		1227.5		1404.6	
		.04		.46		.62
45	918.1		1233.1		1413.3	

Source: Corporate Resources

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FIGURE 7 ACTUAL POPULATION AND PROJECTIONS
1975 - 2025
CITY OF CALGARY
(AS OF JUNE 1)

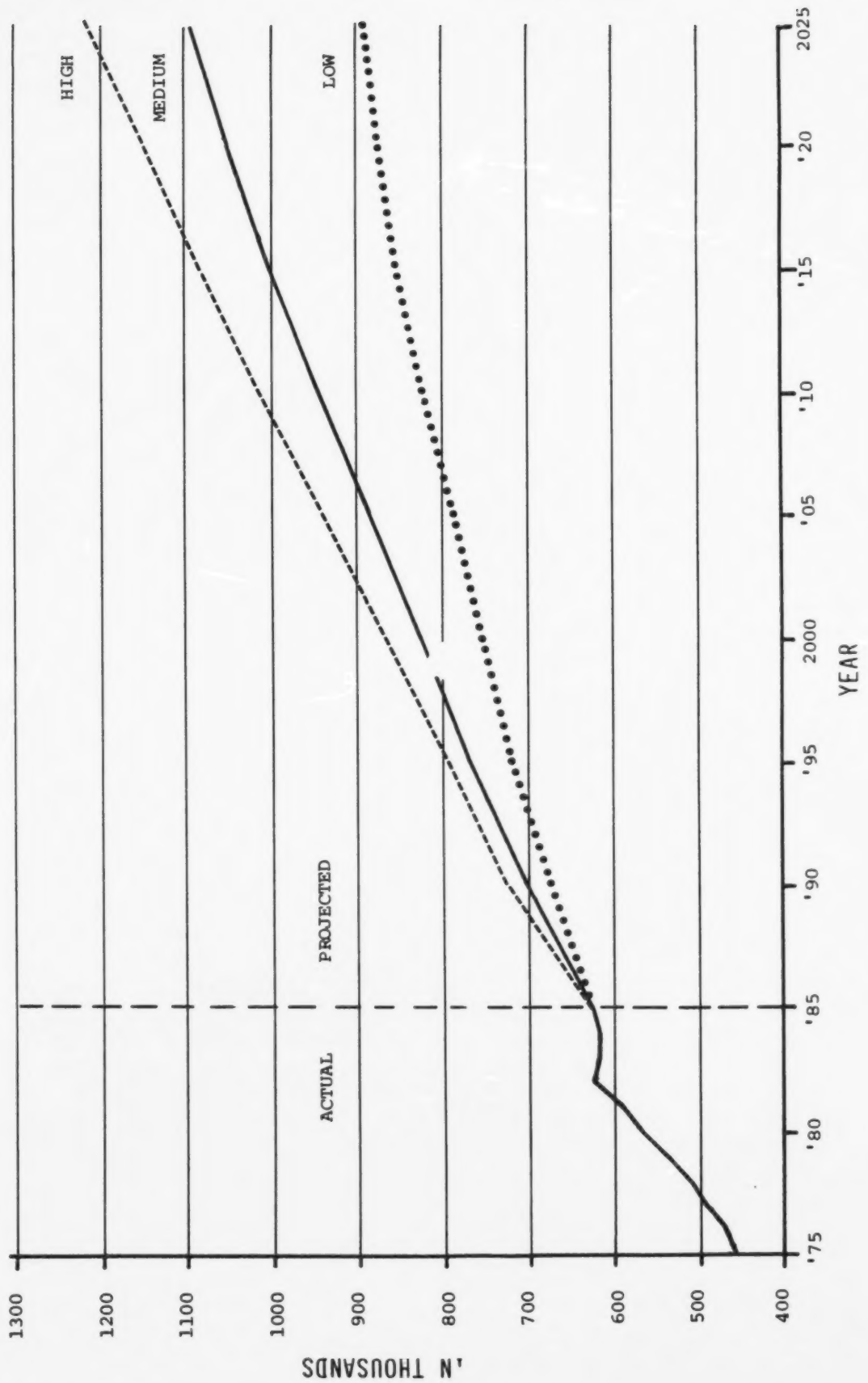


TABLE 9
HISTORICAL CITY OF CALGARY POPULATION
(as of June 1)

Year	Population	% Increase	Year	Population	% Increase
1946	106,700		66	330,575	
		3.09			4.06
47	110,000		67	344,000	
		4.55			4.94
48	115,000		68	361,000	
		6.96			4.16
49	123,000		69	376,000	
		7.32			3.99
50	132,000		70	391,000	
		6.98			3.15
51	141,220		71	403,319	
		7.63			3.64
52	152,000		72	418,000	
		8.55			2.39
53	165,000		73	428,000	
		7.27			2.80
54	177,000		74	440,000	
		6.78			3.41
55	189,000		75	455,000	
		6.36			3.08
56	201,022		76	469,000	
		5.46			4.69
57	212,000		77	495,000	
		8.02			3.87
58	229,000		78	510,000	
		6.99			5.10
59	245,000		79	536,000	
		7.35			5.60
60	263,000		80	566,000	
		6.11			4.72
61	279,062		81	592,725	
		1.77			5.45
62	284,000		82	625,000	
		3.17			-0.50
63	293,000		83	621,600	
		4.10			-0.32
64	305,000		84	619,600	
		3.61			0.90
65	316,000		85	625,300	
		4.61			

GLOSSARY OF TERMS

Age Specific Fertility Rate is the number of births to women of a given age group per 1,000 women in that age group.

Age Specific Survival Rate is defined as one thousand minus the number of deaths per 1,000 population in each single year age group.

Census Metropolitan Area (CMA)

This refers to the main labor market area of an urbanized core (or continuous built-up area) having 100,000 or more population. CMAs are created by Statistics Canada and are usually known by the name of the urban area forming their urbanized core. They contain whole municipalities (census sub-divisions). CMAs are comprised of (1) municipalities completely or partly inside the urbanized core, and (2) other municipalities, if (a) at least 40% of the employed labour force living in the municipality works in the urbanized core, or (b) at least 25% of the employed labour force working in the municipality lives in the urbanized core.

Note: The City of Calgary is presently coterminous with the Calgary Metropolitan Area. Appendix A, Page 42 contains a map of Calgary (CMA).

Cohort is a group which can be isolated from the general population by virtue of some common set of characteristics such as age, sex, race etc. The set of characteristics will remain discrete and common to the group members as they move together through time.

Crude Birth Rate is the number of births per 1,000 population for a given year.

Crude Death Rate is the number of deaths per 1,000 population for a given year.

Population by Single years of Age and Sex is the population classified by sex and by ages 0-1, 1, 2, ..., 89 and 90+.

Total Fertility Rate represents the average number of children that would be born to women, if they survive through their reproductive years (10-49) and bear children in accordance with the age-specific fertility rate observed in a given year. When we say that the total fertility rate observed in 1981 for Calgary is 1.6, this number refers to the average number of children that would be born to a hypothetical cohort of women if they were to experience the fertility observed in Calgary during that year.

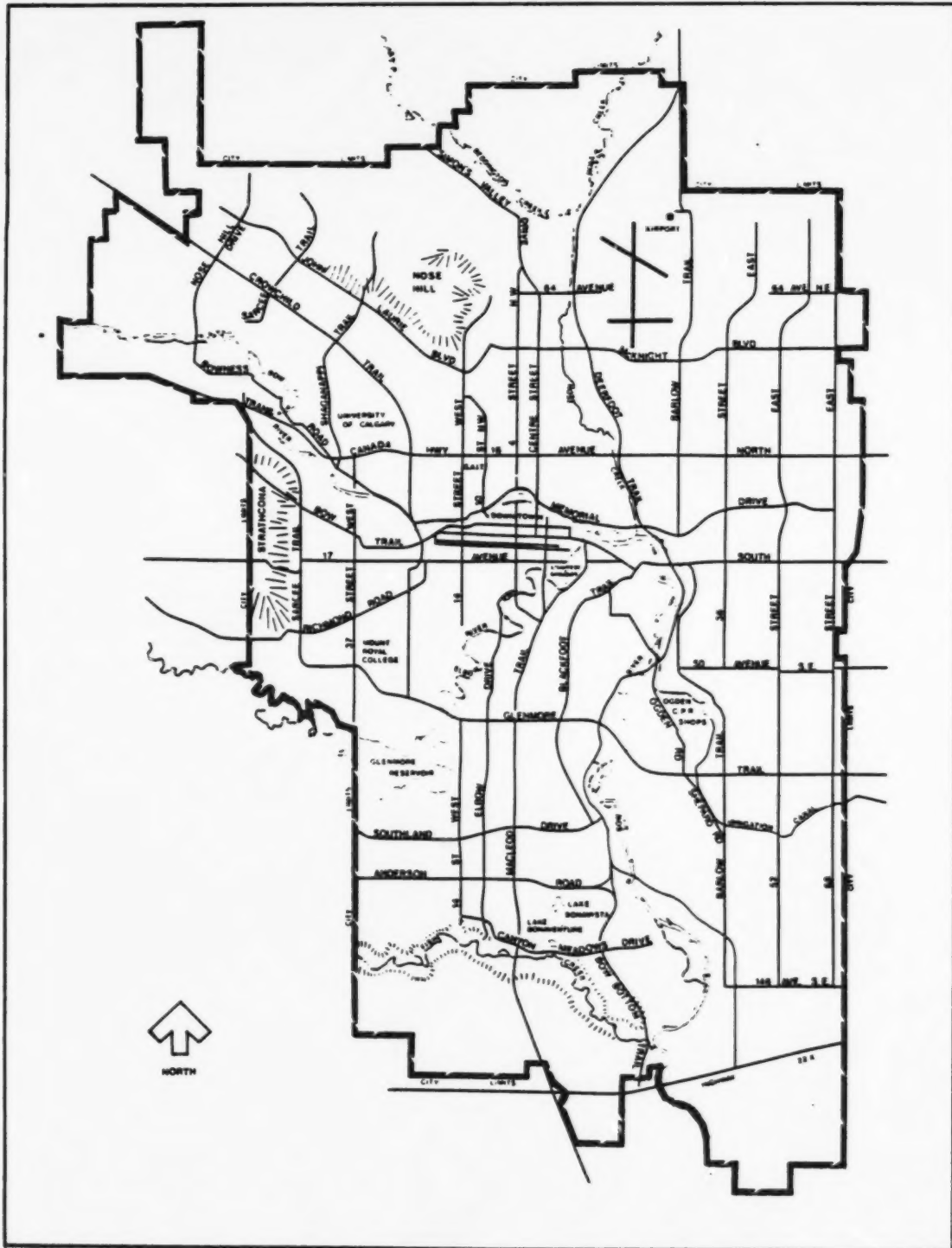
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APPENDIX "A"

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BOUNDARIES OF METROPOLITAN CALGARY - 1985



SOURCE: Corporate Resources

Appendix B

PROJECTED POPULATION OF METROPOLITAN CALGARY
BY SEX AND SELECTED AGE GROUPS
June 1, 1986-1990

Year	Sex	0-4	5-9	10-14	15-19	20-24	25-44	45-64	65-74	75+	TOTAL
1986	M	28,100	22,800	20,500	21,600	26,100	133,400	52,700	11,600	5,800	322,600
	F	26,700	21,500	19,700	20,500	25,900	120,900	52,200	14,800	10,300	312,500
	Total	54,800	44,300	40,200	42,100	52,100	254,300	104,900	26,300	16,100	635,000
1987	M	28,000	24,200	20,700	21,800	26,000	137,300	54,300	12,300	6,100	330,700
	F	26,600	22,700	19,900	20,900	25,100	125,000	53,500	15,500	10,800	320,000
	Total	54,600	46,900	40,600	42,700	51,100	262,300	107,900	27,800	16,800	650,700
1988	M	27,600	25,700	21,000	22,000	27,000	141,300	56,300	12,900	6,400	340,400
	F	26,300	24,300	20,000	21,500	25,500	128,500	55,300	16,300	11,300	329,100
	Total	53,900	50,000	41,000	43,500	52,500	269,800	111,700	29,300	17,800	669,400
1989	M	27,400	27,000	21,600	21,800	27,800	145,000	58,500	13,600	6,800	349,400
	F	26,000	25,600	20,400	21,700	26,200	131,400	57,200	17,000	12,000	337,500
	Total	53,400	52,600	42,000	43,500	54,000	276,400	115,600	30,600	18,800	686,900
1990	M	27,300	27,800	22,300	21,800	28,400	148,400	60,600	14,300	7,200	358,100
	F	25,900	26,500	21,000	21,500	27,100	134,200	59,100	17,600	12,600	345,600
	Total	53,100	54,300	43,300	43,300	55,500	282,600	119,800	31,900	19,800	703,700

1. These projections are based on medium total fertility rate and medium net migration assumptions as outlined in Table 5, Page 22.

2. All individual values and totals in this table have been rounded off; thus, the reported totals do not necessarily equal the sum of individual values.

SOURCE: Corporate Resources Department

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APPENDIX C

LONG-TERM POPULATION PROJECTIONS
CITY OF CALGARY
1991-2045

Assumptions Low Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	% Change	Medium Net Migration	% Change	High Net Migration	% Change
1991	675.4		705.3		720.6	
		1.29		1.76		2.21
92	684.1		717.7		736.5	
		1.08		1.63		1.91
93	691.5		729.4		750.6	
		.94		1.49		1.80
94	698.0		740.3		764.1	
		.89		1.45		1.73
95	704.2		751.0		777.3	
		.84		1.38		1.67
1996	710.1		761.4		790.3	
		.79		1.34		1.62
97	715.7		771.6		803.1	
		.75		1.28		1.57
98	721.1		781.5		815.7	
		.71		1.24		1.51
99	726.2		791.2		828.0	
		.69		1.20		1.47
2000	731.2		800.7		840.2	
		.79		1.32		1.58
2001	737.0		811.3		853.5	
		.76		1.28		1.53
2	742.6		821.7		866.6	
		.74		1.24		1.50
3	748.1		831.9		879.6	
		.72		1.21		1.46
4	753.5		842.0		892.4	
		.69		1.18		1.41
5	758.7		851.9		905.0	
		.67		1.15		1.38
2006	763.8		861.7		917.5	
		.65		1.13		1.35
7	768.8		871.4		929.9	
		.62		1.09		1.31
8	773.6		880.9		942.1	
		.61		1.06		1.27
9	778.3		890.2		954.1	
		.58		1.03		1.25
10	782.8		899.4		966.0	
		.54		1.00		1.21

APPENDIX C continued

Assumptions Low Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	Z Change	Medium Net Migration	Z Change	High Net Migration	Z Change
2011	787.0		908.4		977.7	
		.52		.97		1.17
12	791.1		917.2		989.1	
		.47		.93		1.14
13	794.8		925.7		1000.4	
		.44		.90		1.10
14	798.3		934.0		1011.4	
		.40		.86		1.07
15	801.5		942.0		1022.2	
		.35		.82		1.03
2016	804.3		949.7		1032.7	
		.31		.79		.99
17	806.8		957.2		1042.9	
		.27		.74		.96
18	809.0		964.3		1052.9	
		.22		.71		.92
19	810.8		971.1		1062.6	
		.19		.67		.88
20	812.3		977.6		1071.9	
		.14		.64		.86
2021	813.4		983.9		1081.1	
		.11		.60		.81
22	814.3		989.8		1089.9	
		.06		.58		.79
23	814.8		999.5		1098.5	
		.04		.53		.76
24	815.1		1000.8		1106.8	
		.00		.52		.73
25	815.1		1006.0		1114.9	
		-.02		.48		.70
2026	814.9		1010.8		1122.7	
		-.06		.46		.61
27	814.4		1015.4		1130.2	
		-.09		.43		.65
28	813.7		1019.8		1137.5	
		-.11		.41		.62
29	812.8		1024.0		1144.6	
		-.12		.38		.59
30	811.8		1027.9		1151.4	
		-.16		.36		.56

APPENDIX C continued

Assumptions Low Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	% Change	Medium Net Migration	% Change	High Net Migration	% Change
2031	810.5	-.19	1031.6	.33	1157.9	.54
32	809.0	-.21	1035.0	.31	1164.2	.52
33	807.3	-.22	1038.2	.29	1170.2	.50
34	805.5	-.25	1041.2	.27	1176.0	.47
35	803.5	-.26	1044.0	.25	1181.5	.45
2036	801.4	-.29	1046.6	.23	1186.8	.43
37	799.1	-.30	1049.0	.21	1191.9	.40
38	796.7	-.31	1051.2	.19	1196.7	.38
39	794.2	-.33	1053.2	.17	1201.3	.37
40	791.6	-.34	1055.0	.16	1205.8	.35
2041	788.9	-.37	1056.7	.15	1210.0	.33
42	786.0	-.37	1058.3	.13	1214.0	.32
43	783.1	-.38	1059.7	.11	1217.0	.30
44	780.1	-.40	1060.9	.11	1221.6	.29
45	777.0		1062.1		1225.6	

APPENDIX D

LONG-TERM POPULATION PROJECTIONS
CITY OF CALGARY
1991-2045

Assumptions High Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	% Change	Medium Net Migration	% Change	High Net Migration	% Change
1991	701.5		732.1		747.8	
		1.57		2.06		2.49
92	712.5	1.35	747.2	1.90	766.4	2.21
93	722.1	1.20	761.4	1.76	783.3	2.06
94	730.8	1.15	774.8	1.70	799.4	1.99
95	739.2	1.08	788.0	1.64	815.3	1.93
1996	747.2	1.02	800.9	1.57	831.0	1.85
97	754.8	.99	813.5	1.51	846.4	1.80
98	762.3	.94	825.8	1.47	861.6	1.75
99	769.5	.91	837.9	1.43	876.7	1.69
2000	776.5	1.08	849.9	1.61	891.5	1.87
2001	784.9	1.07	863.6	1.57	908.2	1.84
2	793.3	1.05	877.2	1.55	924.9	1.79
3	801.6	1.05	890.8	1.52	941.5	1.76
4	810.0	1.04	904.3	1.51	958.1	1.73
5	818.4	1.04	918.0	1.49	974.7	1.71
2006	826.9	1.04	931.7	1.47	991.4	1.69
7	835.5	1.03	945.4	1.47	1008.2	1.68
8	844.1	1.04	959.3	1.46	1025.1	1.65
9	852.9	1.02	973.3	1.44	1042.0	1.63
10	861.6	1.01	987.3	1.42	1059.0	1.61

APPENDIX D continued

Assumptions High Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	Z Change	Medium Net Migration	Z Change	High Net Migration	Z Change
2011	870.3		1001.3		1076.1	
		.99		1.40		1.58
12	878.9		1015.3		1093.1	
		.96		1.36		1.55
13	887.3		1029.1		1110.0	
		.92		1.33		1.52
14	895.5		1042.8		1126.9	
		.88		1.29		1.47
15	903.4		1056.3		1143.5	
		.84		1.26		1.44
2016	911.0		1069.6		1160.0	
		.79		1.22		1.41
17	918.2		1082.6		1176.3	
		.75		1.18		1.37
18	925.1		1095.4		1192.4	
		.69		1.13		1.33
19	931.5		1107.8		1208.2	
		.65		1.09		1.28
20	937.6		1119.9		1223.7	
		.61		1.05		1.25
2021	943.3		1131.7		1239.0	
		.57		1.03		1.22
22	948.7		1143.3		1254.1	
		.54		.99		1.19
23	953.8		1154.6		1269.0	
		.51		.96		1.16
24	958.7		1165.7		1283.7	
		.48		.94		1.14
25	963.3		1176.7		1298.3	
		.46		.91		1.11
2026	967.7		1187.4		1312.7	
		.44		.90		1.09
27	972.0		1198.1		1327.0	
		.43		.88		1.08
28	976.2		1208.7		1341.3	
		.43		.87		1.05
29	980.4		1219.2		1355.4	
		.42		.85		1.04
30	984.5		1229.6		1369.5	
		.42		.85		1.03

APPENDIX D continued

Assumptions High Total Fertility Rate						
PROJECTED POPULATION IN THOUSANDS AND PERCENTAGE CHANGE						
Year	Low Net Migration	% Change	Medium Net Migration	% Change	High Net Migration	% Change
2031	988.6		1240.0		1383.6	
		.40		.83		1.01
32	992.6		1250.3		1397.6	
		.40		.82		.99
33	996.6		1260.6		1411.5	
		.40		.82		.98
34	1000.6		1270.9		1425.3	
		.40		.80		.97
35	1004.6		1281.1		1439.1	
		.40		.80		.96
2036	1008.6		1291.3		1452.9	
		.40		.79		.94
37	1012.6		1301.5		1466.6	
		.39		.78		.93
38	1016.5		1311.6		1480.3	
		.39		.77		.91
39	1020.5		1321.7		1493.8	
		.37		.76		.91
40	1024.3		1331.7		1507.4	
		.37		.74		.89
2041	1028.1		1341.6		1520.8	
		.36		.73		.87
42	1031.8		1351.4		1534.1	
		.36		.73		.86
43	1035.5		1361.2		1547.3	
		.34		.71		.85
44	1039.0		1370.9		1560.5	
		.34		.70		.84
45	1042.5		1380.5		1573.6	

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